

Title: The Adequacy of Phosphorus Binder Prescriptions Among American Hemodialysis Patients

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Abstract:

Background: Because hemodialysis treatment has a limited ability to remove phosphorus, dialysis patients must both restrict dietary phosphorus intake and use phosphorus binding medication. Among patients with restricted dietary phosphorus intake (1000 mg/d), phosphorus binders must bind about 250 mg/d of phosphorus to maintain balance. Among patients with more typical phosphorus intake (1500 mg/d), binders must bind about 750 mg/d. We sought to determine the phosphorus binding capacity of binder prescriptions among American hemodialysis patients.

Study Design: Cross-sectional study.

Setting & Participants: National random sample of in-center chronic hemodialysis patients from 300 facilities.

Predictors: Phosphorus binder prescription, patient and facility characteristics.

Outcomes: Estimated phosphorus binding capacity of each prescription.

Measurements: Phosphorus binder prescription, serum phosphorus level, post-dialysis weight, height, age, race/ethnicity, number of years on dialysis.

Results: We obtained data for one randomly selected patient from each of 244 facilities (response rate 81%). About one-third of patients had hyperphosphatemia (serum phosphorus level > 5.5 mg/dL). Among all patients, the mean phosphorus binding capacity was 235 mg/d (SD 154). Approximately 62% of prescriptions had insufficient binding capacity for restricted dietary phosphorus intake (1000 mg/d), and 100% had insufficient binding capacity for typical dietary phosphorus intake (1500 mg/d). Patients using two binders had a higher binding capacity than patients using one binder (451 vs. 236 mg/d, $p < 0.001$). There were no clinically significant relationships between binding capacity and patient or facility characteristics.

Limitations: No direct measurements of dietary phosphorus intake or of adherence to binder prescriptions.

Conclusions: A majority of binder prescriptions have insufficient binding capacity to maintain phosphorus balance. Use of two binders results in higher binder capacity. Further work is needed to understand the impact of binder prescriptions on mineral balance and metabolism, to determine the value of substantially increasing binder prescriptions, and to examine patient adherence to and tolerability of increased binder prescriptions.